30th November, 1960

THREE DIMENSIONAL RESOLUTION TARGETS

1. During the past two years it has become increasingly apparent that internationally as well as nationally an easily understood, easily read, method of determining the resolving capability of an aerial taking lens was needed. After contemplating this problem for approximately one year a three-dimensional system which would more nearly approximate real life was approached as the solution to the problem. Both [redacted] and [redacted] have done experimental work of this type and were consulted for details. Six lens designers and three lens manufacturers were consulted and they approved this medthod enthusiastically as a fairer way of testing their product. As a result the following basic concept was evolved; contrasts and dimensions as herein used are only for a basic guide and should not be used as final figures.

25X1A
25X1A
25X1A

2. The three-dimensional resolution targets would be made up of spheres, pyramids, cubes and three dimensional blobs in diminishing sizes from ten feet to two inches. The three-dimensional blobs would have as width and height the dimensions mentioned and would be easily reproducible. (See Enclosure (A)).

3. A complete set of these targets could be placed on any airfield which had been properly prepared as to background colors as shown on the format drawing, Enclosure (B). The targets themselves could be inexpensively and easily cast on plastic. The targets could then be painted as shown on Enclosure (B) or the colors could be part of the foamed plastic. It should be noted that a complete set of targets, Enclosure (A) would appear on each square as shown on Enclosure (B). Enclosure (A) would be repeated (16) times. Upon completion of a series of tests the targets could be destroyed if desired since they are neither expensive nor time consuming to cast on site.

4. It is futher conceived that a scaled-down version of the three-dimensional targets could be made for indoor use and the same color contrast would be used. The over-all dimensions of such an indoor target would be approximately 45 x 50 inches. The indoor targets should be lighted by three banks of lamps (automobile sealed-beam headlamps would work). The lamps would be burned at 3200°, Kelvin and filtered to 5500 angstroms. The targets could be scaled to be shot at either (51) fifty-one times focal length or with collimetors at infinity focus. Using the three bank system of lamps both flat lighting for the conventional testing could be achieved as well as side lighting which could be made to approximate sun angles. Thus actual results would be predictable of the elusive white on white or light grey on light grey targets. It should be remembered that the same emulsion intended for actual use should be used as well as the same method of processing the emulsion.

5. After much discussion it is believed that the grey color system would be entirely acceptable. However, if the targets are built it is planned to run a series of experiments as to texturing and the use of the four primary colors instead of shades of grey.

6. The concept as herein presented is for your consideration. Comments would be appreciated and should be addressed to:

Chief Photographic Survey Branch,
Room 2D953 The Pentagon
The Joint Staff, Washington 25 DC.
Attention: [redacted]

25X1A

THREE DIMENSIONAL RESOLUTION TARGET FORMAT

BLACK black	DARK GREY dark grey	LIGHT GREY light grey	WHITE white
BLACK dark grey	DARK GREY light grey	LIGHT GREY white	WHITE black
BLACK light grey	DARK GREY white	LIGHT GREY black	WHITE dark grey
BLACK white	DARK GREY black	LIGHT GREY dark grey	WHITE light grey

Lower case color in corner — Background color
Upper case color in center — Color of targets

or

use BLUE GREEN RED + WHITE

THREE DIMENSIONAL RESOLUTION TARGET

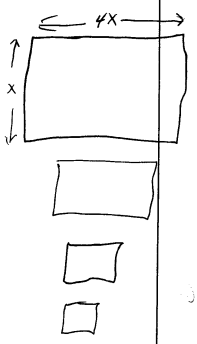
SPHERES

PYRAMIDS

CUBES

THREE DIMENSIONAL BLOBS

BARS



10'

5'

2.5'

1'

6"

4"

2"

Series of shapes and dimensions to be used in each section of format and to be colored as indicated on format sheet